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ABSTRACT

This study explored the usability of learning stage data using the M. B. Baxter Magolda (1992) model for identifying and understanding differences among students and their perceptions of their academic experience at a midsize public community college. The study sought to: identify a dominant learning stage (either absolute, transitional, or independent) for each student; investigate relationships between this stage and demographic variables including, gender, age, placement in English as a Second Language (ESL) courses and curriculum; evaluate students' satisfaction levels; and demonstrate application to specific counseling situations. Students were surveyed with a questionnaire; responses (N=721) were subjected to factor analysis. Findings indicated: (1) older students were characterized by more schooling and experiential learning; (2) students for whom English was a second language were most likely to be in the absolute, or first, learning stage; (3) no significant differences in dominant learning stage were attributable to curriculum; and (4) students expressed an overall satisfaction with the college. Results suggest that knowledge of students' dominant learning stage might be useful in the process of curriculum planning or support services. (Contains 8 tables of survey results and 12 references.) (CK)

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PAPER

STUDENTS' LEARNING STAGES AND ACADEMIC ASSESSMENT

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This paper was presented at the Thirty-Sixth Annual Forum of the Association for Institutional Research held in Albuquerque, New Mexico, May 5-8, 1996. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of Forum Papers.

Jean Endo
Editor
AIR Forum Publications

ABSTRACT

Can colleges use research about students' learning stages to improve their academic programs? At a midsize suburban community college, the 1994 Current Student Survey included a multi-part question intended to capture the first three learning stages of Baxter Magolda's Epistemological Reflection model. Factor analysis was applied to the responses to obtain loadings for each learning stage. Statistical tests were then run, associating each student's Dominant Learning Stage with (1) gender, age, command of English, and curriculum, (2) perceptions of satisfaction and learning, and grade point average (GPA) and (3) merged with information from other sources for three individuals, examples of how learning stage data might be applied in advising or counseling.

STUDENTS' LEARNING STAGES AND ACADEMIC ASSESSMENT

One way of understanding students' intellectual development is that learning progresses in stages such as those William Perry identified twenty-five years ago. The present study builds on recent work by Marcia Baxter Magolda, whose Epistemological Reflection model is a next-generation revision of Perry's model. Concerned that Perry focused on male students, Baxter Magolda agreed with those who sought a better accounting of how women learn. Moreover, like others both intrigued by and somewhat discontented with Perry's work, Baxter Magolda found that few college students reach the upper levels of Perry's nine-stage model. Addressing both concerns, gender-sensitive but with only four stages, Baxter Magolda's taxonomy is especially advantageous to researchers wishing to focus on stages of development likely to be found among students in their first two years of college.

PURPOSE

Overall, the study explores the usability of learning stage data for identifying and understanding differences among students and their perceptions of their academic experience. The study seeks:

- to identify for each student, a dominant learning stage,
- to investigate relationships between dominant learning stage and demographic variables including gender, age, whether placed in English as a Second Language (E. S. L.) courses, and curriculum (whether baccalaureate-transfer or career-occupational),
- to explore whether students' levels of satisfaction with the college, their perceptions about general education, and their GPAs are associated with a dominant learning stage,
- in specific cases of three students, to demonstrate application to specific advising or counseling situations.

If a general educational goal is to assist to progress from one learning stage to another, it is useful to devise convenient but adequate means for measuring progress toward that goal.

THE SETTING

This study was conducted at a midsize public community college in a suburban district near a large midwestern city. The district includes several highly affluent communities of well-educated residents, as well as some of more average incomes and educational levels. The most prosperous communities in the district have aging populations. Population growth and change occur most in the less prosperous areas. In the last decade or so, district communities have witnessed an influx of immigrants from throughout the world — especially Asia (including India and Pakistan) and eastern Europe, particularly Russia. Many new residents share the high regard for education long-held by the older residents, but some also lack a strong command of English.

Thus, the College sees its students changing. Besides the increasing cultural and language diversity, the student body has become increasingly female (now 57 percent women). Moreover, faculty report many students less well prepared than their predecessors, a larger proportion of students with marginal and low academic skills. Together these factors challenge faculty and staff members to know how best to understand the "new" mix of students.

With such concerns in the background, the question arises whether "learning stage" theory might provide a frame of reference that would have wide application, be relatively uncomplicated but adequate for practical decision-making. These concerns underlie the particular interest in Marcia Baxter Magolda's work on "learning stages," especially since she is seeking to take into account both men's and women's ways of knowing. Would such theory provide insights not only at a group level for planning course and program improvements, but also at an individual level, contributing toward improved one-on-one advising, counseling, or tutoring?

A REVIEW OF RELATED LITERATURE

Two key concepts come together in this paper — academic assessment and learning stages. Since both terms are used in various ways, some attention to the literature that has influenced this study provides useful context.

Academic Assessment

Alexander Astin (1991) makes a key point when he recommends "talent development" as the mark of excellence for colleges and universities. Development implies change. Institutions would lack excellence if they merely admitted "good" students, had no effect on them, and then turned out alumni as "good" as those initially admitted. For Astin, excellence means enhancing students' intellectual and scholarly development, to make a positive difference in their lives (pp. 6-7). The idea is not merely to paste new data or information to students' brain cells, but to help students unfold their intellectual and scholarly abilities, to realize the potential they have so that it is at their command. The concept is rooted in Aristotle's central idea that good people fulfill themselves.

What, then, is the role of assessment? Astin suggests that assessment function to enhance students' educational development by providing information about the likely impact of alternative courses of action. Impact here means change that is attributable to the college, as distinct from such easily measured outputs as numbers of graduates and earnings of alumni. Applying his Input-Environment-Outcome design for assessment, Astin urges researchers to describe students at an Input stage, to identify how a college's Environment may cause change, and to measure Outcomes that result from the interaction of the Input and the collegiate Environment. Astin's "talent development" idea is, of course, open to numerous specific interpretations.

In their extensive review of recent research on the impact of college, Pascarella and Terenzini (1991) categorize studies for several forms of intellectual growth — Piagetian formal reasoning, critical thinking, abstract reasoning and concept learning, and some forms of reflective judgment among them. Reviewing research derivative from Perry, including Baxter Magolda's early empirical testing of half of Perry's model, they point out that research generally has shown progression from absolutist stages toward more sophisticated ones (pp. 124-125), but that there are anomalies and ambiguities. The need continues to explore what can be gained from this approach.

Learning Stages

Three approaches to learning stage theory are briefly reviewed, Baxter Magolda's and those of two of her predecessors, William Perry, whose pioneering work was done almost entirely with male students and Mary Belenky who, withthree others, worked with women.

The Perry Model. After several decades counseling undergraduate Harvard men, Perry (1970) postulated nine positions to account for the variety of learning problems he had seen. Perry organized his positions in three groups of three each, dealing in order with dualism, multiplicity, and commitment. In the first group, Perry describes students rejecting **dualism**, an authoritarian presupposition that for every question, right or wrong answers can be found. Perry found his subjects moving on through awareness of multiple points of view on some questions, toward an often reluctant acceptance of the nearly overwhelming fact that certainty about knowledge is virtually impossible (positions 1-3). By position 3, alternative answers seem equally well justified, yet some people get better grades than others, even when "the answer" is unknown. Students puzzled by this dilemma express no small amount of frustration when they ask, "What does the instructor want?"

In Perry's second group of three positions, **multiplicity**, learners take charge, thinking that they can always change their minds if new facts become known. Next they see the need to work past a position, which might today be termed a naive relativism, that suggests that any decision or opinion is as good as any other. Finally, they begin to realize that meaning depends, at least in part, on the context and intellectual commitments that learners bring to the process of making knowledge claims or decisions of their own (Positions 4-6). The next step is a big one.

In the third set of three positions, the basis for decisiveness is examined. Learners realize that their own epistemic **commitments** about the importance of questions, the adequacy of evidence, and similar philosophical factors have contributed to their ability to resolve difficult questions. Like a helix, in which the cycle continues, it is now possible to ask what alternative epistemic presuppositions are possible, and whether more general criteria might be found for their making some, rather than other, epistemic commitments (positions 7-9).

The Belenky et al. *Model.* In 1986, Mary F. Belenky, Blythe M. Clinchy, Nancy R. Goldberger, and Jill M. Tarule published their critical discussion of Perry's approach, arguing that he did not use data from interviews with women in illustrating or validating his scheme. They postulate four "women's ways of knowing."

In the first way of knowing, women conceive of **Received** Knowledge as absolutely true. Because this leaves them feeling somewhat alienated, they move from this toward a second way of knowing, involving **Subjective** Knowledge. Increasingly, but cautiously, they come to trust their own "inner" voices and sensitivities, even though this results in multiple perspectives. The third way, **Procedural** Knowledge, includes two tracks, one for "separate knowing," where knowers and objects of study are emotionally detached, and another for "connected knowing," where knowers have feelings about the objects of their study. The fourth stage involves **Constructed** knowledge and a way of knowing in which women bring sensitivities to concrete particulars, seeking decisions for cases at hand rather than appealing, as would males, to abstract principles, more general in their applications.

The Baxter Magolda Model. Baxter Magolda (1992) synthesizes the nine positions identified by Perry and the four ways of knowing developed by Belenky *et al.* into just four stages, similar but not identical to those of Belenky *et al.* She seeks a model adequate for both genders. In the first, the **Absolutist** stage, students presuppose that knowledge generally consists of a collection of discrete facts understood in blacks and whites, questions with answers "out there" waiting to be learned. Men at this stage are more likely to try assertively to "master" knowledge, and women more likely to "receive" it somewhat more passively. For both genders, the presupposition is that knowledge is absolute, and that uncertainty is merely a matter of not knowing "the answer."

At a second **Transitional** stage, learners realize that lacking "ready made" answers, they need to find alternative approaches. The male pattern is "Impersonal," moving from memorization toward understanding how particular facts are related to one another. Women at this stage are "Interpersonal." There is not only willingness to make personal judgments, but also interest in what other people think.

At the third **Independent** stage, students are comfortable thinking for themselves and happy to accept a variety of "opinions," sometimes with a naive relativist bent that suggests one opinion is about as good as any other. Baxter Magolda terms the masculine pattern at this stage "Individual," describing these men as presupposing that knowledge contains discrepancies just because everyone has their own beliefs. She labels the feminine pattern at this stage "Interindividual," since women, too, are working things out for themselves, but are concerned, to a greater degree than males, with sharing and reconciling personal views with those of other people, in the hope that differences may turn out to be nothing more than matters of personal interpretation.

The fourth **Contextual** stage is often reached in the work place, after college; see also Baxter Magolda (1994a). At this stage, the presupposition is that knowers need to place knowledge and decisions in contexts (patterns, theories, models) which knowers themselves select or construct and within which criteria emerge for judging some approaches better than others, and facts and value-decisions are understood in relationship to their contexts. At this stage, Baxter Magolda finds no gender-related patterns.

Ultimately, these assessment and learning stage concepts might help researchers obtain information for assessing the success of efforts to help students develop more advanced ways of thinking. If something like Baxter Magolda's learning stages were considered for use as an over-arching, macroscopic, Input or Outcome variable, a first step would be to find a method for identifying individual students' Dominant Learning Stages.

RESEARCH METHODOLOGY AND STRATEGY

Although, as Perry argued, students could, in principle, be at different learning stages in different subject areas, an initial task for this study was to devise a way to conveniently obtain for each student a measure of each of Baxter Magolda's first three learning stages. Perry, Belenky *et al.*, and Baxter Magolda all developed their models using qualitative research methods — interviews and insightful interpretations of what students said or implied in those interviews. Moreover, each of these three paraphrased and published excerpts from the language students used in these interviews.

To obtain a quantitative "translation" of the Baxter Magolda model, eighteen items were embedded in the College's 1994 omnibus Current Student Survey (CSS). Each was intended to provide evidence for one of the three learning stages. In the CSS, students were asked how much they liked or disliked various learning activities — activities derived from Baxter Magolda's reports of preferences as expressed in her interviews of students she classified as mainly absolutist, transitional, or independent in their present stage of learning.

To provide a reality check on whether the items drafted actually captured the intended stages, factor analysis was applied to item responses. The Dominant Learning Stage for each student is defined as the learning stage with the largest numeric factor. The Dominant Learning Stage, derived from continuous factor values, is a discrete class variable. Since a Dominant Learning Stage is obtained individually for each student, any individual student's tendency to rate "high" or "low" across the board is compensated for. Some of the items used in this study may be replaced with better items; it is the process rather than the particular product that might be of most interest here.

This central variable, the Dominant Learning Stage, is first treated as a dependent variable and associated with independent variables — gender, age group, whether placed in E.S.L. courses, and academic curriculum (transfer or career). It is then treated as an independent variable for association with students' overall satisfaction with the college, with their perceptions of how much the college is helping them in various areas of general education, and with cumulative GPAs. Table 1 lists the variables used in this study.

The college administers a CSS annually in a randomly selected group of class sections. About half of the faculty members selected each year permit students to complete the survey in class, a level of cooperation college researchers much appreciate, since it contributes enormously to strong response rates. To compensate for the fact that students with more courses are more likely to be enrolled in one of the sections randomly selected for the sample, responses are weighted in an inverse proportion to the number of courses in which respondents are enrolled. Table 2 presents demographic variables used in this study and compares the values, unweighted and weighted where available, with data for the College's fall 1994 student population as a whole.

It is clear from comparison of these and other variables (country of high school, whether enrollment was full time or part time, campus of attendance, and whether enrolled day, evening, or weekend) that the weighted sample closely approximates the overall population of enrolled students. The apparent disparity in the case of curriculum is explained by the fact that the data for the population as a whole come from college admission records generally not updated to reflect changes in students' curricula until degrees or certificates are awarded. By contrast, the CSS data reflect students' self-reports of their current curricula. Accordingly, throughout this study, percentages, means, the factor analysis, chi-squares, and ANOVA statistics are all calculated from data weighted in this way.

DATA SOURCES

Data for this study were collected mainly through the College's fall 1994 CSS. There were 721 respondents. Embedded in the CSS were (a) the items from which loadings for the learning stages were derived, (b) demographic items that elicited students' gender, age, and curriculum (transfer or career), and (c) more substantive items eliciting levels of satisfaction with the College and perceptions of their educational experience in the area of general education. Respondents had the option of providing their student ID number, which could be used to retrieve additional data from the College's central data base for student information. The CSS included

Table 1. VARIABLES IN THE STUDY*

Variable	Categories or Range	Source and Definition
Central Variable		
(This variable is treated as Dependent with respect to the Independent variables listed below and as Independent with respect to listed Dependent (Outcome) variables.)		
Dominant Learning Stage	Absolute Transitional Independent	Constructed by factor analysis from 15 survey responses about learning likes and dislikes. (See Table 3.)
Independent Variables		
Gender	Men Women	Survey, self-reported, augmented from central data base
Age Range	Ages 16-23 Ages 24 or above	Survey, self-reported, augmented from central data base
English Placement	E. S. L. Other or placed "out"	From college files, for CSS respondents who provided their ID number.
Curriculum	Baccalaureate Career	Survey, self-reported, augmented if formal award on central data base
Dependent Variables		
Over-all satisfaction	1 = Not at all confident 7 = Extremely confident	Survey item: How confident are you that attending [*Name*] College has been a good decision for you?
General education objectives	1 = Very little 4 = Very much	Ten survey items, individually identified in Table 6. (Restricted to respondents not new to college who need to meet gen ed requirements
Grade Point Average	A = 4.0	Cumulative after Fall 1994. From college files, for CSS respondents who provided their ID number.

* Does not include several variables presented in Table 8 but not used in any statistical analyses.

self-reports of their goals in attending the College and students' allocations of time, information used in the section on applications to individual cases, but not statistically summarized for this study.

Merged in from the central student records data base, (for those 413 students who provided their student identification numbers on the survey form) were gender, age, institutional data on whether students had been placed in courses on English as a Second Language (E.S.L.), including E.S.L. reading, composition, and conversation, and, cumulative GPA after Fall 1994. If appropriate, these were used to supplement survey data.

Table 2. COMPARISON OF INDEPENDENT (DEMOGRAPHIC) VARIABLES

Variable	Student Population* (N = 10,501)	Unweighted Sample (N = 721)	Weighted Sample**	Difference (Weighted Sample less Population
Gender				
Men	43 %	43 %	39 %	- 4 %
Women	57 %	57 %	61 %	+ 4 %
Age Range				
16-23	43 %	54 %	39 %	- 4 %
24 or above	57 %	46 %	61 %	+ 4 %
English Placement***				
E.S.L.	N/A		13 %	
Other or placed "out"	N/A		87 %	
Curriculum****				
Baccalaureate	64 %	58 %	44 %	- 20 %
Career	36 %	43 %	56 %	+ 20 %

* From official enrollment data as of the tenth day of the semester.

** Placement data are for taken from official college files of incoming students' assessment tests for English course placement, and are limited to CSS respondents who provided their student ID numbers.

*** Curriculum data for the entire student population are from new student data. The weighted data reflect students' perceptions as provided in the survey, may reflect changes since admission, and have been updated in cases of awarded degrees or certificates.

Finally, several respondents were identified for whom there were not only CSS responses (including derived "learning stage" identifications) and student identification numbers for accessing the central data base, but also "Learning Profiles." These profiles include tutors' notes on how individual students think they best learn, their strengths and weaknesses, and their idea of the kinds of help they need. Prepared by Instructional Support Services' professional staff at the time of intake interviews, these also include student identification numbers. For these individuals, data were merged in from the central data base for cumulative credit earned after fall 1994, whether a degree or certificate was awarded, and term of last enrollment.

CONSTRUCTING THE CENTRAL VARIABLE

Factor analysis was applied to the responses to the learning stage items embedded in the CSS. Of the 18 items, three did not load as expected and could not be interpreted as loaded. These three were dropped from the study much as if they had never been written. A new factor analysis, run on the remaining 15, is reported in Table 3.

Absolutist Learning Stage. The first three items listed in Table 3 are appropriate for Absolutist presuppositions that answers are out there, independent of any knower's characterization, waiting to be learned. Memorization of

Table 3. ROTATED FACTOR PATTERN WITH LOADINGS FOR EACH LEARNING STAGE*

Text of survey item: Different students find they like some classes better than others. Please rate how much you like or do not like the following. (1 = Do not like; 7 = Like very much)

Survey item **	Absolute Factor	Transitional Factor	Independent Factor
Memorize details.	.792	.209	- .075
Focus on a particular way of thinking.	.739	- .020	.199
With other students, quiz each other to further learning	.382	.355	.246
Listen to other students' points of view.	.136	.751	.208
Listen, taking in as much information as possible.	.203	.724	- .038
See how other people do things.	.076	.696	.311
Have an instructor who welcomes a variety of ideas.	- .050	.651	.344
Have classes where grading is seen by students and instructors as a mutual process.	.079	.635	.045
Read authors with different outlooks.	.060	.511	.359
Debate views.	.012	.102	.852
Find ideas that support my views.	.239	.115	.824
Find that some ideas are better supported than others.	.272	.110	.787
Actively participate in interesting activities.	- .119	.348	.572
Be challenged to think for myself.	- .071	.442	.563
Share own views with other students.	.186	.475	.525

* Factor analysis, using SAS, varimax rotation method, setting option for 3 factors.

** Three items were dropped. Two "Think Independently" and "Have an instructor who expects students to think for ourselves" correlated with each other and with the item listed second to last, so that all three were pulled in with the Transitional items. The other item dropped read "Be in classes with a relaxed atmosphere." On reflection this popular item was not discriminating and could fit with any factor.

details implies no interpretation of those details by the learner. Focusing on particular ways implies excluding distracting side issues that might arise. The quizzing of other students connotes a group activity that, like the others, focuses on "getting it right."

Transitional Learning Stage. The six items that make up the Transitional factor reflect awareness and interest in alternative interpretations, even a multiplicity of points of view, but no concern with criteria by which some might be judged better than others within some context. One item in this set loaded differently than had been expected.

It reads "Listen, taking in as much information as possible," and was drafted as an example of Absolute knowing. Instead, it loaded as Transitional. Respondents may have understood "as much information as possible" as likely to produce multifarious results. Understood this way, it seems consistent with the other Transitional items.

Independent Learning Stage. Finally the six items for Independent knowing reflect activities involve students moving toward developing voices of their own. There is awareness that some interpretations might be better defended than others, conviction that active participation is a part of classroom learning, and enough confidence in one's own views to want to share them with others. Some might object that debate belongs with Transitional knowing. No doubt, some debate, especially in public partisan politics, is highly polemical, even dogmatic. Yet, when debate is done well, respect for factors that support an opposing point of view is genuine.

FINDINGS

In the first three sections of findings, chi-square and analysis of variance (ANOVA) statistics are reported for tests associating the constructed "dominant learning stage" variable (1) with selected demographic variables, (2) with students' perceptions of their learning experience, and (3) with grade point average. In a final section, a non-statistical application of these data for advising or counseling is explored.

Dominant Learning Stages and Demographic Variables

Learning stage is first treated as a dependent variable and associated with students' gender, age group, whether placed in E.S.L. courses, and academic program (transfer or career). Findings confirmed several anticipated relationships among some biographic-demographic variables, but not others. Table 4 provides a list of the demographic variables and the chi-square measures obtained for association with Dominant Learning Stage. Significant differences were found in the cases of gender, age, and whether students required E.S.L. courses in either reading or composition, but not in the complicated case of curriculum.

Gender. In the setting where this study was conducted, the ratio of men to women is about 40 percent to 60 percent. Whatever this ratio, it is important that men and women be equally well served. The data obtained in this study confirm major differences in the responses of men and women responding to these learning stage items. The differences show women at more advanced stages than men.

The Dominant Learning Stage for half of the male students was found to be Absolutist, but women were more nearly evenly divided among the three learning stages. The difference was statistically significant with a greater chi-square than was obtained for any of the other variables in this study. As a practical matter, this finding supports a recommendation that members of the faculty and staff make a special effort to listen to male students with a view to helping them to accept not only the existence, but the appropriateness of multiplicity in scholarship, and to work through it to arrive at convictions of their own.

Part of the criticism expressed by Mary Belinkey and her colleagues was that William Perry's study may have been biased toward men. The large chi-square suggests that, whatever else, this study was not biased against women.

Age. Since older students on the whole are likely to have had more schooling and more experiential learning than younger ones, and the theory underlying this study is developmental, the expected finding is that larger proportions of older students would be at the more advanced stages. The data obtained confirm this hypothesis. This study found that the largest proportion of the students in the traditional college age range of 16-23 were at the absolutist level, but that students 24 or older were about evenly divided among the three stages.

Community colleges serve many older students. In the setting for this study, about three-fifths of the students are 24 or older. Since more older students were at more advanced learning stages than were younger ones, the

Table 4. TESTS OF ASSOCIATION: DOMINANT LEARNING STAGE BY GENDER, AGE, ENGLISH PLACEMENT, AND CURRICULUM

GROUP	N (Not Weighted)	CHI-SQUARE TEST (Weighted)			PERCENTAGES (Weighted) DOMINANT LEARNING STAGE		
		CHI-SQ	df	p	ABSOL	TRANS	INDEP
ALL RESPONDENTS	595				38 %	30 %	32 %
GENDER	563	49.8	2	.000			
Men					20 %	8 %	12 %
Women					18 %	22 %	20 %
AGE GROUP	549	11.4	2	.003			
16 - 23					18 %	10 %	12 %
24 or older					20 %	19 %	21 %
English Placement	358	16.6	2	.000			
E.S.L.					6 %	2 %	2 %
Other or placed "out"					32 %	28 %	30 %
CURRICULUM	595	5.3	2	.071			
Baccalaureate					16 %	14 %	16 %
Career					22 %	16 %	16 %

practical implication of this finding may be the College might identify specific actions it could take that would help more of its younger students to move sooner and further along paths of intellectual development.

In this study, the age variable provides cross-sectional information, comparing contemporary older and younger students. A longitudinal study is needed to determine how specific individual students move along this learning stage continuum. Also, evidence of specific things the College does to encourage this to happen would be needed to attribute such development to the College environment, rather than to the general effect of life experience.

English as a Second Language. As noted in describing the setting for this study, the College has experienced an influx of residents lacking a strong command of English. Since language skills are important to appraising multiple interpretations, discussing alternative views, and making epistemic decisions, the hypothesis tested here is that a larger proportion of students placed in E.S.L. would be at the lower learning stages.

Having a native language other than English is a problem only if students lack proficiency in English. For this study, CSS respondents were identified for whom E.S.L. courses were recommended based on the assessment testing used to place incoming students in appropriate English courses. Subjects for this chi-square test had to be restricted to those (413 of the 721) who had provided their student identification numbers on the CSS. The E.S.L. group was contrasted with all others, a group that included native speakers of English who were placed in remedial English courses as well as everyone who placed out of any developmental English. The chi-square statistic was significant. More than half of those placed in E.S.L. courses were at the Absolutist learning stage, a far larger proportion than in the case of non-E.S.L. students.

E.S.L. students are generally thought able to think well in their native languages, their problem being to transfer these thinking skills from the native language into English. The question arises, can E.S.L. courses simultaneously teach a second language and also help students at lower learning stages to toward more sophisticated stages?

Curriculum. These data fail to show any statistically significant difference in Dominant Learning Stage that can be attributed to curriculum, whether baccalaureate transfer or career-technical. On the survey, students were asked to look at a page-long list of numbered degree and certificate programs and to enter on the survey the number corresponding to their program. In the analysis of the survey results, the number codes were automatically translated into the baccalaureate or career categories; respondents were not asked to do that. However, in those cases where a degree or certificate has been awarded since the term of the survey (Fall 1994), survey data were updated by award file data.

Some imperfection with these data is inevitable, stemming mainly from confusion about curricula for business. Accounting, financial services, marketing, and management, at the community college level, are career programs leading to such jobs as accounting assistant or financial services advisor. Courses in these programs usually are not accepted in transfer to baccalaureate degree programs in business. The College also offers a baccalaureate-oriented business transfer program, essentially a program in general education with electives especially selected to be appropriate for transfer to colleges or universities that offer business-area majors. Should an accounting career program student responding to the CSS have entered the baccalaureate-transfer business curriculum number, the survey response likely would be in error unless a degree or certificate was subsequently awarded.

Demographic variables. The study found that men, younger students, and those placed in E.S.L. courses were the more likely to be at the Absolutist learning stage. They appear most in need of help to progress toward more advanced learning stages. Curriculum, transfer or career, was not associated with Dominant Learning Stage.

Dominant Learning Stages and Students' Perceptions of Their Learning Experiences

Next, Dominant Learning Stage was treated as an independent variable and compared with students' perceptions of their experience at the College as a whole and with areas of general education in particular.

Confidence that the College was a good choice. One of the items in the CSS asked respondents how confident they were that attending this College had been a good decision for them. On a seven-point scale (1 = not at all confident, 7 = extremely confident), the results were quite positive with an overall mean (weighted) of 5.72. An analysis of variance, reported in Table 5, confirmed that students in the Transitional and Independent learning stages were more confident that they had done well in selecting the College, than were those at the lower

Table 5. ANALYSIS OF VARIANCE AND MEANS OBTAINED FOR

EFFECT OF DOMINANT LEARNING STAGE ON LEVEL OF STUDENT SATISFACTION

Text of survey item: How confident are you that attending [*Name of College*]
has been a good decision for you? (1 = Not at all Confident, 7 = Extremely confident)

N = 590 (unweighted)

	ANOVA (weighted)					MEANS (weighted)			
						ALL	DOMINANT LEARNING STAGE		
SOURCE	df	SS	MS	F	p		ABSOL	TRANS	INDEP
Stage	2	32.61	16.30	5.68	.003	5.72	5.51	5.78	5.79
Error	587	1684.16	2.87						
Sum	589	1716.77							

Absolutist stage. Those in the upper two stages did not differ in their responses to this question. This finding should reinforce any College efforts to facilitate students' moving on toward more advanced learning stages.

General Education. For only one of the College's ten general education objectives did student perceptions differ by Dominant Learning Stage. As Table 6 shows, on nine of the objectives, students saw the College serving them

Table 6. ANALYSES OF VARIANCE AND MEANS OBTAINED FOR EFFECT OF DOMINANT LEARNING STAGE ON GENERAL EDUCATION OBJECTIVES

Text of survey question: To what extent do you believe [*Name of College*] is helping you in these areas: (1 = Very little, 4 = Very much)

Survey item	N * (Unweighted)	ANOVA (Weighted) df**	F	p	MEAN RESPONSES ALL RESPONDENTS (Weighted)	BY LEARNING STAGE
To value human diversity and recognize underlying similarities among people	295	2	5.33	.005	2.76	
					2.65	ABSOL
					2.95	TRANS
					2.72	INDEP
To listen more effectively	300	2	1.66	.192	2.83	
To read with improved comprehension	300	2	1.32	.270	2.78	
To improve understanding and awareness of artistry in language, thought, and imagination	300	2	0.96	.385	2.54	
To understand and do appropriate mathematical operations	300	2	0.63	.532	2.51	
To examine contemporary issues in a global context	298	2	0.50	.608	2.38	
To sharpen skills used in scientific investigation	299	2	0.34	.712	2.61	
To gain more effective writing skills	300	2	0.31	.732	2.66	
To better understand human behavior and its effects	300	2	0.20	.822	2.69	
To develop skills in oral presentation	299	2	0.05	.954	2.55	

* The N (unweighted) is many fewer than 721. Observations are restricted to continuing students with general education requirements.

** The ANOVA table is abbreviated. The df for error is N - 3, for the sum N - 1. In the case of the first item, Dominant Learning Stage has 2 df. The SS = 14.91, giving an MS of 7.45. The remaining df = 292, for which the SS = 408.64, and the MS is 1.39. The resulting F ratio is the improbable 5.33 reported. SS and MS data for the others are available from the author.

equally well regardless of their dominant learning stage. The one for which the contrast was significant is for helping students learn "to value human diversity and recognize underlying similarities among people."

These data suggest the College may wish to explore ways to teach this objective more effectively for students at the Absolute and Independent levels. If members of the faculty decide they want to address this finding, they would want to develop different strategies for each of the two "end" positions. On developmental theory, these two groups would learn in different ways. For example, modeling behavior that demonstrates respect for diverse people might be most effective at the Absolute level. For students at the Independent stage, it might be more effective to ask students to reflect individually on some pertinent topic such as likely consequences of not treating diverse people with respect, considering rights of diverse people, or reflecting on the meaning of inherent worth.

Dominant Learning Stages and Cumulative Grade Point Average

Table 7 reports findings from two analyses of variance that tested for effects of Dominant Learning Stage on GPA. Results of a first test including all students (who provided student ID numbers) show that students whose Dominant Learning Stage is at the lower Absolute stage have lower GPAs, but that there is virtually no difference in the GPAs of those at the Transitional and Independent stages.

Would the result be the same if the group were limited to students pursuing degrees or certificates, those who would have a greater commitment to education as a long-term process than do students who enroll for an occasional course? A second test was run in which subjects were restricted to those seeking a degree or certificate, as evidenced either by a response on the CSS that this was their goal in attending the College, or by information in the College data base that a degree or certificate had been awarded in Fall 1994 or thereafter. Results from the test on this smaller group of respondents showed an increase in GPA with each Dominant Learning Stage. The difference still was greatest between those at the Absolute and the Transitional Learning Stages.

Table 7. ANALYSIS OF VARIANCE AND MEANS OBTAINED FOR EFFECT OF DOMINANT LEARNING STAGE ON GRADE POINT AVERAGE*

	ANOVA (weighted)					MEANS (weighted)			
						ALL	DOMINANT LEARNING STAGE		
SOURCE	df	SS	MS	F	p		ABSOL	TRANS	INDEP
*FIRST TEST: ALL RESPONDENTS** (N = 305)*									
Stage	2	19.49	9.75	6.32	.002	2.89	2.55	2.91	2.90
Error	302	465.91	1.54						
Sum	304	485.41							
*SECOND TEST: AWARD-SEEKING RESPONDENTS** (N=249)*									
Stage	2	13.59	6.79	5.11	.007	2.80	2.52	2.83	2.85
Error	246	327.32	1.33						
Sum	248	340.91							

* (Cumulative GPA as of Fall 1994)

** Limited to respondents who provided a student ID number on the CSS.

Dominant Learning Stages and Individual Learning Profiles

How might learning stage information apply to individual students? If institutional learning is primarily what happens in the relationship between a student and a teacher at opposite ends of the legendary log, the key question is whether "Learning Stage" information would be a useful addition for advisors or course instructors working with individual students.

To explore this question, it is useful to look at particular cases. In the spirit of the qualitative research methodology used by each of the theorists — Perry, Belenky and her colleagues, and Baxter Magolda — three cases of individual students are described in Table 8 with details incorporated from "learning stage" items, as well as two other sources. These include the academic data base, and the "learning profiles," (the notes from intake interviews made when students seek tutoring or other help through the College's Instructional Support Services).

Table 8. INDIVIDUAL CASES

ABSOLUTE KNOWING — CASE # 1

DEMOGRAPHIC FACTORS

GENDER: Male AGE: 31 ESL? Yes CURRICULUM: Transfer

OTHER: First-generation college. Lived in the U.S. for 3 years. NATIVE LANGUAGE: Gujarati

STUDENT'S GOAL AT COLLEGE (Data from CSS and Learning Profile)

To transfer credits, not necessarily earn AA degree. To become a CPA.

LEARNING STAGES (From CSS. Ratings were on 7-point scale, 7 high)

Dominant Stage	Rating	Other Stages	Rating
Memorize details.	6	Read authors with different outlooks.	5
With other students, quiz each other to further learning.	6	See how other people do things.	6
Focus on a particular way of thinking.	5	Be challenged to think for myself.	7

LEARNING PROFILE (LP) (From Instructional Support Services' intake interview)

Student learns best visually. Prefers to study alone. Uses videos and TV to study.
Sees math, accounting, statistics as strengths, and economics as a weakness.
His best instructor uses "very clever" explanations.

STUDENT'S ALLOCATIONS OF TIME

Enrollment	Study Time (hours/credit/week)	Employed (hours/week)
One course (3 credits)	5 hours per week; 1.7 hrs/wk/credit	Half time (20 hrs/wk)

TYPE OF HELP SOUGHT AT INSTRUCTIONAL SUPPORT SERVICES

Language, writing and grammar (E.S.L. tutoring).

OUTCOMES

GPA, EARNED CREDIT	LAST ENROLLED	CONFIDENCE IN THIS COLLEGE
3.44 on 18 credits	Fall 1995, no degree	7 on 7-point scale, 7 high

Case 1. For the first of these students, the Dominant Learning Stage is Absolute Knowing. He is older, an E.S.L. student hoping to become a CPA. In Fall 1994, he was taking only one course, an accounting course. What might nudge him along toward the Transitional stage?

An advisor, noting that this student is not especially interested in authors with different opinions, but knowing that economists do not always agree, might select a few diverse economists and urge the student to read more than one "authority." Since the student has roots in northwestern India, a problem in the economy of that region might be a good choice. Moreover, since the student has been studying alone, but seems to have more time available than many other students, he might be strongly encouraged to stop in at the support service's "open lab" for tutoring, just to enter into conversation with other students and to get used to the idea of a multiplicity of points of view.

Coming from Learning Stage information is evidence that this student may need increased comfort with diversity.

Case 2. The second example is that of a young woman who has completed the equivalence of one full year of college (31 credits) and is beginning on the second year. She would like to go into special education, but has avoided math for several terms, and is now having difficulty with remedial math. She is enrolled full time, and

TRANSITIONAL KNOWING CASE # 2

DEMOGRAPHIC FACTORS

GENDER: Female AGE: 20 ESL? No CURRICULUM: Transfer

OTHER: At least one parent attended college

STUDENT'S GOAL AT COLLEGE (Data from CSS and from Learning Profile)

To transfer credits, not necessarily earn AA degree. To become a special education teacher.

LEARNING STAGES (From CSS. Ratings were on 7-point scale, 7 high)

Dominant Stage	Rating	Other Stages	Rating
Listen to other students' points of view.	7	Share own views with other students.	7
Have an instructor who welcomes a variety of ideas.	7	Find ideas that support my views.	5
See how other people do things.	6	Focus on a particular way of thinking.	2

LEARNING PROFILE (LP) (From Instructional Support Services' intake interview)

Student learns best visually. Prefers to study alone. Reading and talking notes works best.
Sees English as a strength and math as a weakness.
Her best instructor is outgoing and considers students' opinions to be important.

STUDENT'S ALLOCATIONS OF TIME

Enrollment	Study Time (hours/credit/week)	Employed (hours/week)
Full time (12 credits	3 hours/wk; 0.67 hrs/credit/ week	Nearly full time (30 hrs/wk)

TYPE OF HELP SOUGHT AT INSTRUCTIONAL SUPPORT SERVICES

Help in remedial math. Wants to "understand what I am doing." Wants help taking tests.

OUTCOMES

GPA, EARNED CREDIT	LAST ENROLLED	CONFIDENCE IN THIS COLLEGE
2.87 on 31 credits	Fall 1995, no degree	3 on 7-point scale, 7 high

works nearly full time, a very heavy schedule. She is studying about 40 minutes a week per credit hour, far less that the usual recommendation of two to three hours per week for each course credit.

Her learning stage data suggest high ratings not only at the present Transitional stage, but also for several activities at the Independent stage. It would make sense to build on her apparent strengths, and to recommend opportunities where, to have something to share with others, she would need to present a report. Since she appears to be most interested in views she already has, she might well learn more about alternatives if there is opportunity for diverse feedback. Maybe the project could help her with any math anxiety, occasioning re-thinking about math and its relevance to special education, to research findings, or to helping special education students learn math.

Learning Stage data suggest that this student may need help weighing the pros and cons of alternative ideas and finding reasons for thinking some ideas are better supported than others.

INDEPENDENT KNOWING CASE #3

DEMOGRAPHIC FACTORS

GENDER: Male AGE: 36 ESL? No CURRICULUM: Transfer

OTHER: At least one parent attended college

STUDENT'S GOAL AT COLLEGE (Data from CSS and Learning Profile)

To transfer credits, not necessarily earn AA degree. To qualify for a job in physiology or nutrition

LEARNING STAGES (From CSS. Ratings were on 7-point scale, 7 high)

Dominant Stage	Rating	Other Stages	Rating
Share own views with other students.	7	Listen and take in as much information as possible.	5
Debate views.	7		
Find that some ideas are better supported than others.	7	Memorize details.	3
		Read authors with different outlooks.	3

LEARNING PROFILE (LP) (From Instructional Support Services' intake interview)

Student learns well visual & auditory; studies alone. Takes lots of notes.
Sees English and creative art as strengths, logic as a weaknesses.
Best instructor allowed student to express himself.

STUDENT'S ALLOCATIONS OF TIME

Enrollment	Study Time (hours/credit/week)	Employed (hours/week)
Two courses (6 credits)	20-24 hrs/wk; 3.8 hrs/credit/week	Full time (40 hrs/wk)

TYPE OF HELP SOUGHT AT INSTRUCTIONAL SUPPORT SERVICES

Time management, note-taking, test-taking.
Tutoring on strategies for solving algebra problems.

OUTCOMES

GPA, EARNED CREDIT	LAST ENROLLED	CONFIDENCE IN THIS COLLEGE
3.55 on 22 credits	Fall 1995, no degree	7 on 7-point scale, 7 high

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Case 3. The third example is a mature student with strong preferences for Independent Knowing. The student's goal is to transfer and to qualify eventually for a position in physiology and nutrition. He came to ISS for help finding strategies for solving algebra problems and has had difficulty in the past with a logic course. In large part, logic also involves inventing strategies for solving problems. He sees his strengths in the humanities, in English and creative art. Given this student's creative and Independent outlook, he appears to need help in seeing that algebra (logic too) requires inventing creative and imaginative strategies to move validly from what is known to what is not. Conversation may well reveal that he has always supposed that everyone who does well with these problems does them in the same way. If so, counter-examples might be eye-opening. This student will probably learn algebra better if he comes to see it from within the context of his "kind of thing." This process may also lead him toward the next learning stage, that of Contextual Learning.

Here, the Learning Stage helps to identify a student ready to work with Independent Knowing, but who may need help applying those preferences to the present difficulty with algebra.

Individual Insight. Educational research, even at the institutional level, does well not to lose sight of individual learners. That has been a major insight of the Classroom Assessment movement. This section suggests that the principle might apply to learning stage research at the institutional level as well.

Summary of Findings

This study reports a process for identifying Dominant Learning Stage, and tests relationships with various demographic variables, several examples of students' perceptions, students' GPAs, and individual applications for advising or counseling.

Dominant Learning Stage. The study outlined a process for drafting likely items, using factor analysis to determine loadings, and identifying the factor with the largest loading as that student's Dominant Learning Stage.

Demographic variables. Students' Dominant Learning Stage differed by gender, age, and whether the student had placed into E.S.L. Courses. The gender difference produced a surprisingly large chi square statistic. As expected, older students were at more advanced learning stages than were younger students. E.S.L. students tended to cluster at the lowest stage. However, the null hypothesis with respect to curriculum could not be rejected.

Student Perceptions. Two kinds of perceptions were tested. A chi-square statistic showed association between students' sense of confidence that attending this College has been a good decision for them and their Dominant Learning Stage. The more satisfied students were at the more advanced learning stages. Another chi-square test showed that students' perceptions of only one among the College's ten general education objectives was associated with Dominant Learning Stage. This objective involves valuing human diversity and recognizing underlying similarities among people. Students at the Transitional Learning stage were more likely to think the College had helped them with this than those at either the Absolute or the Independent Knowing stages.

Grade Point Averages. A substantial difference was found between the GPAs of respondents at the Absolute Learning Stage and those at the upper two stages. In the case of those in degree or certificate programs, GPAs of those at the Independent Stage were only slightly higher than that of those at the Transitional stage.

Advising and Counseling. Ways were suggested that faculty or staff members might apply Learning Stage data to help individual students with immediate problems and to assist them in moving toward more advanced learning stages.

CONCLUSIONS

Criteria for assessment research at the institutional level include having wide application and being relatively uncomplicated but adequate for practical decision-making. Since every student would have a Dominant Learning

Stage, one that can change in the course of education, application would be quite universal. The theory also allows for the possibility that in different areas of their lives, students may be at different learning stages.

The study outlines a "rough and ready" way to identify students' Dominant Learning Stages. Embedding a few items in a questionnaire for a random sample of students might be sufficient to identify change in a group. However, for individual counseling or advising, a version that could be completed "on the spot" would be needed. Factor analysis loadings might be based on prior samples and updated from time to time.

Finally, the theory ought to lead to practical decision making. For example, can and should the "subject matter" of E.S.L. courses be selected, in part perhaps, with a view toward helping more non-native English speakers find their way to more advanced learning stages? Can anything be done to help male students "catch up" with women students? (At another institution, this gender relationship may be the other way around.) Are there curricular implications, especially in the area of general education? In the case that surfaced in the present research, can it help more students to value human diversity and to recognize underlying similarities among people? Would advising, counseling, or teaching be improved if faculty members, advisors, counselors, or other institutional professionals knew more about this theory? What topics would be useful for faculty or staff development sessions?

Better understanding of students generally enhances the ability of faculty and staff members to serve their students well. If learning stages are an important factor, research supporting students' learning might be enhanced by taking account of them. For faculty members and others who find it helpful to think in terms of students' learning stages, "home grown" information, such as is described here, might be useful in the process of planning for new or improved curricula or support services.

IMPLICATIONS FOR INSTITUTIONAL RESEARCH

One item of unfinished business is to improve the scale items. Although a factor analysis calculation compensates for their being six Transitional and six Independent items, but only three Absolute items, face validity requires additional Absolute items to reduce the dependence on just three items. Furthermore, items with the largest standard deviations might be re-worded for increased specificity of meaning.

Another study might explore in depth the unanticipated gender-related difference that was obtained. Responses of men and women might be compared on each item. Perhaps new items that men would more often find more attractive need to be added to the list of items.

Faculty members' perceptions of these learning stages have not been explored. As in the case of most instances in which something new is introduced to a group, a thorough learning process should precede such a study, so that the learning stage concept is understood in some depth before it is assessed.

The importance of the latter, developing faculty understanding of the concept, is nicely illustrated in an example that Marcia Baxter Magolda used to open her presentation at a recent Assessment Conference (Baxter Magolda, 1994b). She asked her audience to imagine they were teaching a literature class reading *Romeo and Juliet*. In discussion one student announces that in her opinion, Juliet was not a Capulet. An Absolutist-oriented instructor might counter-argue that from the Cast of Characters, clearly Juliet's last name is Capulet. Period. An instructor more sensitive to advanced learning stages might instead inquire why the student thinks so, and learn that the student has noticed that Juliet does not act like the other Capulets. She is something of a black sheep in the family. She admires Romeo, but a "normal" Capulet would honor the long-standing feud and shun Romeo. Which is the better teaching strategy?

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